

CLAIMS

1. A method of making garment material, the method having the steps:
applying coagulant to a substrate;
5 applying a foam of a polymeric material to the substrate;
allowing for the coagulant to coagulate some of the foam; and
removing uncoagulated foam from the substrate to leave a layer of
coagulated polymeric material on the substrate.
- 10 2. The method according to claim 1, wherein the step of removing
uncoagulated foam comprises removing an outer layer of the foam to
leave an inner layer of coagulated polymeric material on the substrate.
3. The method according to claim 2, wherein the outer layer is removed
15 before a skin has formed on the outer surface of the foam layer.
4. The method of any one of claims 1 to 3, wherein the step of removing
the uncoagulated foam comprises directing a fluid at the substrate.
- 20 5. The method of claim 4, wherein the fluid is a liquid.
6. The method of claim 5, wherein the liquid comprises water.
7. The method of claim 5 or 6, wherein liquid is directed as a spray.
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8. The method of claim 7, wherein the spray has a pressure in the range 1
to 10 bar.
9. The method of claim 8, wherein the spray has a pressure in the range 1
30 to 4 bar.

10. The method of claim 4, wherein the fluid is a gas.
11. The method of claim 10, wherein the gas is at least predominantly air.
- 5 12. The method of claim 10 or 11, wherein gas is directed as a jet.
13. The method of claim 12, wherein the jet has a pressure in the range 1 to 10 bar.
- 10 14. The method of claim 13, wherein the jet has a pressure in the range 1 to 4 bar.
- 15 15. The method of any one of claims 4 to 14 wherein the fluid is directed at angle in the range 0° to 45° to the normal to the surface of the substrate.
- 20 16. The method of claim 1, wherein the step of removing uncoagulated foam from the substrate comprises immersing the substrate in liquid.
17. The method of claim 16 wherein the liquid comprises water.
- 25 18. The method of any previous claim wherein the substrate comprises knitted nylon.
19. The method of any one of claims 1 to 17 wherein the substrate is a blend of 95% nylon and 5% lycra.
- 30 20. The method of any previous claim comprising the step of immersing the substrate in water to remove coagulant after the step of removing the uncoagulated foam from the substrate.

21. The method of claim 20 comprising the step of drying the substrate after the step of immersing the substrate in water.
- 5 22. The method of claim 21 wherein the drying comprising placing the substrate in an oven.
23. The method of any previous claim, wherein the step of allowing the coagulant to coagulate some of the foam lasts for a period in the range 60
10 to 180 seconds.
24. The method of any previous claim, wherein the coagulant is an aqueous solution of one or more electrolytes.
- 15 25. The method of any one of claims 1 to 23, wherein the coagulant is an alcoholic solution of one or more electrolytes.
26. The method of claim 24 or 25, wherein the one or more electrolytes comprise one or more of the following substances: formic acid, acetic
20 acid, calcium nitrate and calcium chloride.
27. The method of any previous claim, wherein the polymeric material comprises one of: nitrile latex, natural latex, polyurethane latex, polyvinyl chloride latex, neoprene and polyvinylacetate.
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28. The method of claim 27, wherein the polymeric material comprises a blend of two or more of: nitrile latex, natural latex, polyurethane latex, polyvinylchloride latex, neoprene and polyvinylacetate.
- 30 29. The method of any previous claim, wherein the substrate is placed on a mould before the coagulant is applied to the substrate.

30. The method of claim 29 wherein the mould is composed of one or more of the following materials: metal, ceramic, fibre glass and plastic.

5 31. The method of claim 29 or 30, wherein the mould takes the form a portion of a garment.

32. The method of claim 29 or 30, wherein the mould takes the form of a complete garment.

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33. The method of any previous claim, wherein the garment is a garment chosen from one of the following: a coat, an apron, a boot, a shoe, a sock, an item of underwear, a glove, and a corset.

15 34. The method of any previous claim, further comprising the step of applying a coating in an array of discrete areas to the layer of coagulated polymeric material.

20 35. The method of claim 34 further comprising at least one of the steps of:

washing the garment or garment material to remove residue;
partially drying the garment or garment material; and
dressing the garment or garment material on an array former
before applying the coating; and then
25 curing the layer of coating; and
stripping the garment or garment material from the array former.

36. The method according to claim 35, wherein a solution of water and detergent is used to wash the garment or garment material.

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37. The method of claim 35 or claim 36, wherein the garment or garment material is partially dried at a temperature of around 50-70°C.
38. The method of any one of claims 34 to 37, wherein the layer of
5 coating comprises one of or a blend of two or more of nitrile latex, natural latex, PU latex and latex.
39. The method of any one of claims 34 to 38, wherein the viscosity of the layer of coating is around 100-400 poise.
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40. The method of any one of claims 34 to 39, wherein the layer of coating is cured for 30-45 min at 60-140°C.
41. The method of any one of claims 34 to 39, wherein the layer of
15 coating is cured in two stages, the first stage comprising 15-30 min at 60-80°C and the second stage comprising 20-40 min at 120-150°C.
42. The method of any of claims 34 to 41 wherein the array of discrete areas of coating comprises an array of dots.
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43. The method of any of claims 34 to 41 wherein the array of discrete areas of coating comprises a combination of an array of dots and strengthening patches.
- 25 44. A garment material produced by the method of any preceding claim.
45. The garment material of claim 44 having a water vapour permeability in the range 3.5 to 6.5 mg.cm⁻².h⁻¹.
- 30 46. The garment material of claim 44 or claim 45, when subjected to a temperature of 20 ± 2 °C and a relative humidity of 65 ± 2% for 265

minutes, holding between 1.0 mg and 8.5 mg of water per cm² of the garment material.

47. A garment produced by the method of any one of claims 1 to 43.

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48. The garment of claim 47 having a water vapour permeability in the range 3.5 to 6.5 mg.cm⁻².h⁻¹.

49. The garment of claim 47 or claim 48, when subjected to a
10 temperature of 20 ± 2 °C and a relative humidity of $65 \pm 2\%$ for 265 minutes, holding between 1.0 mg and 8.5 mg of water per cm² of the garment.

50. The garment of any one of claims 47 to 49, wherein the garment is a
15 glove.

51. A garment or garment material having a substrate and a layer of coagulated polymeric material penetrating at least partially the substrate, wherein the garment or garment material has a water vapour permeability
20 in the range 3.5 to 6.5 mg.cm⁻².h⁻¹.

52. The garment or garment material of claim 51, when subjected to a temperature of 20 ± 2 °C and a relative humidity of $65 \pm 2\%$ for 265 minutes, holding between 1.0 mg and 8.5 mg of water per cm² of the
25 garment or garment material.

53. A garment or garment material having a substrate and a layer of coagulated polymeric material penetrating at least partially the substrate, wherein the garment or garment material, when subjected to a
30 temperature of 20 ± 2 °C and a relative humidity of $65 \pm 2\%$ for 265

minutes, holds between 1.0 mg and 8.5 mg of water per cm² of the garment or garment material.

54. A garment or garment material having a substrate and a layer of
5 coagulated polymeric material penetrating the substrate, wherein the polymeric material does not fully penetrate the substrate.

55. The garment or garment material of any of claims 51 to 54 further
10 comprising a layer of dots formed from polymeric material bonded to the layer of coagulated polymeric material.

56. A garment or garment material having a substrate and a layer of
coagulated polymeric material penetrating at least partially the substrate,
wherein bonded to the layer of coagulated polymeric material is a layer of
15 dots formed from polymeric material.

57. The garment or garment material of any one of claims 51 to 56,
wherein the garment is a glove.

20 58. Apparatus for producing garment material comprising a mould arranged to support a substrate, foam application means arranged to apply foam of a polymeric material to the substrate, and foam removing means arranged to remove uncoagulated foam from the substrate to leave a layer of coagulated polymeric material on the substrate.

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59. Apparatus according to claim 58, further comprising dot application means arranged to apply a dot coating to the layer of coagulated polymeric material.

30 60. Apparatus according to claim 59, further comprising at least one of washing means arranged to remove any residue from the garment

material, drying means arranged to partially dry the washed gloves, and curing means arranged to cure the dot coating.

61. A method as hereinbefore described with reference to Figures 3 and
5 4.

62. An apparatus as hereinbefore described with reference to Figure 4.

63. A garment as manufactured according to the method as hereinbefore
10 described with reference to Figures 3 and 4.